

Montana Fish, Wildlife & Parks

SPECIFICATIONS FOR WORK SPECIAL PROVISIONS

Contents:

1. Project Description
2. Project Related Contracts
3. Site Inspection
4. Soils Information
5. Project Representative, Inspections, and Testing
6. Engineering Interpretations
7. Rejected Work
8. Utilities
9. Construction Safety
10. Construction Limits and Areas of Disturbance
11. Decontaminate Construction Equipment
12. Tree Protection and Preservation
13. Construction Surveys
14. Material Sources and Construction Water
15. Materials Salvage and Disposal
16. Stored Materials
17. Staging and Stockpiling Areas
18. Security
19. Cleanup
20. Access During Construction
21. Construction Traffic Control
22. Sanitary Facilities
23. Contract Closeout
24. Measurement and Payment

1. PROJECT DESCRIPTION

The Project involves construction work associated with:

**Yellowbay State Park Water System Improvements
Fish, Wildlife & Parks (FWP) project # 7136321
Located in Lake County, MT**

This project consists of upgrading the water treatment system at Yellow Bay State Park. The work will entail the installation of a new spring box pump chamber, water line, chlorine contract pipe, new fence and general earth work.

2. PROJECT RELATED CONTACTS

Project contacts are designated as follows:

Owner:

Montana FWP
1420 E. Sixth Ave.
PO Box 200701
Helena, MT 59620-0701

FWP Project Representative:

Jason Senn, P.E.
FWP Project Manager
1522 9th Avenue
Helena, MT 59620
406-841-4007 (wk)
406-431-4032 (cell)
406-841-4004 (fax)

3. SITE INSPECTION

All Bidders should satisfy themselves as to the construction conditions by personal examination of the site described in this document. Bidders are encouraged to make any - investigations necessary to assess the nature of the construction and the difficulties to be encountered, see General Conditions, Article 3.

4. SOILS INFORMATION

Geotechnical investigation work has not been done for this Project. It is the responsibility of the Bidders to conduct all investigations and determine the soil type and digging conditions that may be encountered with this Project prior to bid preparation, see General Conditions, Article 3.

5. PROJECT REPRESENTATIVE, INSPECTIONS, AND TESTING

The Contractor's work will be periodically tested and observed to insure compliance with the Contract Documents. Complete payment will not be made until the Contractor has demonstrated that the work is complete and has been performed as required. If the

Project Representative detects a discrepancy between the work and the requirements of the Contract Documents at any time, up to and including final inspection, such work will not be completely paid for until the Contractor has corrected the deficiency, see General Conditions, Article 9.

The Project Representative will periodically monitor the construction of work to determine if the work is being performed in accordance with the contract requirements. The Project Representative does not have the authority or means to control the Contractor's methods of construction. It is, therefore, the Contractor's responsibility to utilize all methods, equipment, personnel, and other means necessary to assure that the work is installed in compliance with the Drawings and Specifications, and laws and regulations applicable to the work. Any discrepancies noted shall be brought to the Contractor's attention, who shall immediately correct the discrepancy. Failure of the Project Representative to detect a discrepancy will not relieve the Contractor of his ultimate responsibility to perform the work as required, see General Conditions, Article 3.

The Contractor shall inspect the work as it is being performed. Any deviation from the Contract requirements shall be immediately corrected. Prior to any scheduled observation by the Project Representative, the Contractor shall again inspect the work and certify to the Project Representative that he has inspected the work and it meets the requirements of the Contract Documents. The Project Representative may require uncovering of work to verify the work was installed according to the contract documents, see General Conditions, Article 12.

The work will be subject to review by the Project Representative. The results of all such observations, and all contract administration, shall be directed to the Contractor only through the Project Representative.

5.1 Services Required by the Contractor. The Contractor shall provide the following services:

- a. Any field surveys to establish locations, elevations, and alignments as stipulated on the Contract Documents. FWP reserves the right to set preliminary construction staking for the project. The Contractor is responsible to notify FWP for any construction staking discrepancies.
- b. Preparation and certification of all required shop drawings and submittals as described in the General Conditions, Article 3.
- c. All testing requiring the services of a laboratory to determine compliance with the Contract Documents shall be performed by an independent commercial testing laboratory acceptable to the Project Representative. The laboratory shall be staffed with experienced technicians properly equipped, and fully qualified to perform the tests in accordance with the specified standards.
- d. Preparation and submittal of a construction schedule, including submittals, see General Conditions, Article 3. The schedule shall be updated as required, as

defined in the Contract Documents.

- e. All Quality Control testing as required by the Contractor's internal policies.
- f. All Quality Assurance testing and/or re-testing as stated in the Contract Documents, see General Conditions, Article 13.

5.2 Services Provided by the Owner. The Owner shall provide the following services at no cost to the Contractor except as required for retests as defined in the Contract Documents.

- a. The Project Representative may check compaction of backfill and surfacing courses using laboratory testing submittal information supplied by the Contractor. These tests are to determine if compaction requirements are being fulfilled in accordance with the Contract Documents. It is ultimately the responsibility of the Contractor to insure that this level of compaction is constant and met in all locations.
- b. Any additional Quality Assurance testing deemed appropriate by the Owner, at the Owner's expense.

6. ENGINEERING INTERPRETATIONS

Timely Engineering decisions on construction activities or results have an important bearing on the Contractor's schedule. When engineering interpretation affects a plan design or specifications change, it should be realized that more than 24 hours may be required to gain the necessary Owner participation in the decision process including time for formal work directive, or change order preparation as required.

7. REJECTED WORK

Any defective work or nonconforming materials or equipment that may be discovered at any time prior to the expiration of the warranty period, shall be removed and replaced with work or materials conforming to the provisions of the Contract Documents, see General Conditions, Article 12. Failure on the part of the Project Representative to condemn or reject bad or inferior work, or to note nonconforming materials or equipment on the Contractors submittals, shall not be construed to imply acceptance of such work. The Owner shall reserve and retain all its rights and remedies at law against the Contractor and its Surety for correction of any and all latent defects discovered after the guarantee period (MCA 27-2-208).

Only the Project Representative will have the authority to reject work which does not conform to the Contract Documents.

8. UTILITIES

The exact locations of existing utilities that may conflict with the work are not precisely

known. It shall be the Contractor's responsibility to contact the owners of the respective utilities and arrange for field location services. **One Call Locators, 1-800-424-5555**

The Contract Documents may show utility locations based on limited field observation and information provided to the Project Representative by others. **The Project Representative cannot guarantee their accuracy.** The Contractor shall immediately notify the Project Representative of any discrepancies with utility locations as shown on the Contract Drawings and/or their bury depths that may in any way affect the intent of construction as scoped in these specifications.

There will be no separate payment for exploratory excavation required to locate underground utilities.

8.1 Notification. The Contractor shall contact, in writing, all public and private utility companies that may have utilities encountered during excavation. The notification includes the following information:

- a. The nature of the work that the Contractor will be performing.
- b. The time, date and location that the Contractor will be performing work that may conflict with the utility.
- c. The nature of work that the utility will be required to perform such as moving a power pole, supporting a pole or underground cable, etc.
- d. Requests for field location and identification of utilities.

A copy of the letter of notification shall be provided to the Project Representative. During the course of construction, the Contractor shall keep the utility companies notified of any change in schedule, or nature of work that differs from the original notification.

8.2 Identification. All utilities that may conflict with the work shall be the Contractor's responsibility to locate before any excavation is performed. Field markings provided by the utility companies shall be preserved by the Contractor until actual excavation commences. All utility locations on the Drawings should be considered approximate and should be verified in the field by the Contractor. The Contractor shall also be responsible for locating all utilities that are not located on the Drawings.

Utilities are depicted on the Contract Documents in accordance with their achieved "Quality Levels," as defined in the American Society of Civil Engineer's Document, ASCE 38, "Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data." Reliance upon these data for risk management purposes during bidding does not relieve the Contractor, or Utility Owner from following all applicable utility damage prevention statutes, policies, and/or procedures during construction. It is important that the Contractor investigates and understands the scope of work between the project Owner and Engineer regarding scope of limits of the utility

investigations leading to these utility depictions. Definitions of Quality Levels are described as follows:

- a. "QUALITY LEVEL A" – (QLA): LOCATING THROUGH EXCAVATION. QLA data are highly accurate and are obtained by surveying an exposed utility. As such, both horizontal and vertical data are recorded. Survey accuracies are typically set at 15mm (1/2-inch) vertically, and to project survey standards horizontally (typically the same as for topography features), although these survey accuracies and precisions are generally left to the owner to specify in a scope of work. In addition to the applicable standard of care and any other additional standards imposed by commercial indemnity clauses, the accuracy of these location data is also typically guaranteed. Other data typically characterized include material type, surface elevation, utility size/capacity, outside dimensions, and configurations, soil type, and utility condition.
- b. "QUALITY LEVEL B" – (QLB): DESIGNATING. QLB information is obtained through the application of appropriate surface geophysical methods to identify the existence and approximate horizontal location of utilities (a utility's "designation") within the project limits, followed by survey, mapping, and professional review of that designation. Underground utilities are identified by interpretation of received signals generated either actively or passively, and through correlating these received signals with visible objects (QLC) and record data (QLD) to determine function. Designated utilities that can't be identified are labeled as "unknowns." Although approximate has no accuracy associated with it, generally the locations are within inches rather than feet. The more utility congested the area or the deeper the utilities, the less likely it is that the designations will achieve that accuracy. These designations are then surveyed to project accuracies and precisions, typically third-order accuracy similar to other topography features. Note that surveying existing one-call marks does not lead to QLB data, since the genesis of the marks was not under the direct responsible charge of the professional certifying the QLB depictions, and one-call generally does not address unknown utilities, privately owned utilities, utilities without records, abandoned utilities, and so on. Nor does the professional have knowledge of the field technician's qualifications, training, and level of effort.
- c. "QUALITY LEVEL C" – (QLC): SURFACE VISIBLE FEATURE SURVEY. QLC builds upon the QLD information by adding an independent detailed topography site survey for surface-visible appurtenances of subsurface utilities including but not limited to fire hydrants, valves, risers, and manholes. Professional judgment is used to correlate the QLD data to the surveyed features, thus increasing the reliability of both utility location and existence. It is a

function of the professional to determine when records and features do not agree and resolve discrepancies. This may be accomplished by depiction of a utility line at quality level D, effectively bypassing or disregarding (but still depicting) a surveyed structure of unknown origin. Additional resolution may result from consultation with utility owners.

- d. "QUALITY LEVEL D" – (QLD): EXISTING RECORDS RESEARCH. QLD is the most basic level of information. Information is obtained from the review and documentation of existing utility records, verbal accounts, and/or one-call markings (to determine the existence of major active utilities and their approximate locations).

- 8.3 Removal or Relocation of Utilities. All electric power, street lighting, gas, telephone, and television utilities that require relocation will be the responsibility of the utility owner. A request for extending the specified contract time will be considered if utility owners cause delays.
- 8.4 Public Utilities. Water, sewer, storm drainage, and other utilities owned and operated by the public entities shall, unless otherwise specifically requested by the utility owner, be removed, relocated, supported or adjusted as required by the Contractor at the Contractor's expense. All such work shall be in accordance with these Contract Documents, or the Owner's Standard Specifications or written instructions when the work involved is not covered by these Specifications.
- 8.5 Other Utilities. Utilities owned and operated by private individuals, railroads, school districts, associations, or other entities not covered in these Special Provisions shall, unless otherwise specifically requested by the utility owner, be removed, relocated, supported or adjusted as required by the Contractor at the Contractor's expense. All work shall be in accordance with the utility owner's directions, or by methods recognized as being the standard of the industry when directions are not given by the owner of the utility.
- 8.6 Damage to Utilities and Private Property. The Contractor shall protect all utilities and private property and shall be solely responsible for any damage resulting from his construction activities. The Contractor shall hold the Owner and Project Representative harmless from all actions resulting from his failure to properly protect utilities and private property. All damage to utilities shall be repaired at the Contractor's expense to the full satisfaction of the owner of the damaged utility or property. The Contractor shall provide the Owner with a letter from the owner of the damaged utility or property stating that it has been repaired to the utility owner's full satisfaction.
- 8.7 Structures. The Contractor shall exercise every precaution to prevent damage to existing buildings or structures in the vicinity of his work. In the

event of such damages, he shall repair them to the satisfaction of the owner of the damaged structure at no cost to the Owner.

- 8.8 Overhead Utilities. The Contractor shall use extreme caution to avoid a conflict, contact, or damage to overhead utilities, such as power lines, streetlights, telephone lines, television lines, poles, or other appurtenances during the course of construction of this project.
- 8.9 Buried Gas Lines. The Contractor shall provide some means of overhead support for buried gas lines exposed during trenching to prevent rupture in case of trench caving.
- 8.10 Pavement Removal. Where trench excavation or structure excavation requires the removal of curb and gutter, concrete sidewalks, or asphalt or concrete pavement, the pavement or concrete shall be cut in a straight line parallel to the edge of the excavation by use of a spade-bitted air hammer, concrete saw, colter wheel, or similar approved equipment to obtain a straight, square clean break. Pavement cuts shall be 2 feet wider than the actual trench opening.
- 8.11 Survey Markers and Monuments. The Contractor shall use every care and precaution to protect and not disturb any survey marker or monuments, such as those that might be located at lot or block corners, property pins, intersection of street monuments or addition line demarcation. Such protection includes markings with flagged high lath and close supervision. No monuments shall be disturbed without prior approval of the Project Representative. Any survey marker or monument disturbed by the Contractor during the construction of the project shall be replaced at no cost to the Owner by a licensed land surveyor.
- 8.12 Temporary Utilities. The Contractor shall provide all temporary electrical, lighting, telephone, heating, cooling, ventilating, water, sanitary, fire protection, and other utilities and services necessary for the performance of the work. All fees, charges, and other costs associated therewith shall be paid for by the Contractor.

9. CONSTRUCTION SAFETY

The Contractor shall be solely and completely responsible for conditions of the jobsite, including safety of all persons (including employees and subcontractors) and property during performance of the work. This requirement shall apply continuously and not be limited to normal working hours. Safety provisions shall conform to U.S. Department of Labor (OSHA), and all other applicable federal, state, county, and local laws, ordinances, codes, and regulations. Where any of these are in conflict, the more stringent requirement

shall be followed. The Contractor's failure to thoroughly familiarize himself with the aforementioned safety provisions shall not relieve them from compliance with the obligations and penalties set forth therein, see General Conditions, Article 10.

10. CONSTRUCTION LIMITS AND AREAS OF DISTURBANCE

- 10.1 Construction Limits. Where construction easements or property lines, are not specifically called out on the Contract Documents, limit the construction disturbance to ten (10) feet, when measured from the edge of the slope stake grading, or to the adjacent property line, whichever is less. Disturbance and equipment access beyond this limit is not allowed without the written approval of both the Project Representative and the Owner of the affected property. If so approved, disturbance beyond construction limits shall meet all requirements imposed by the landowner; this includes existing roads used and/or improved as well as the construction of new access roads. Special construction, reclamation, or post-construction reclamation or other closure provisions required by the landowner on access roads beyond the construction limits shall be performed by the Contractor at no additional cost to the Owner.
- 10.2 Areas of Disturbances. Approved areas of disturbance are those areas disturbed by construction activities within the construction limits and along designated or approved access routes. Such areas may require reclamation and revegetation operations, including grading to the original contours, top soiling with salvaged or imported topsoil, seeding, fertilizing, and mulching as specified herein. Other areas that are disturbed by the Contractor's activities outside of the limits noted above will be considered as site damage or unapproved areas of disturbance, see General Conditions, Articles 3 and 10. This includes areas selected by the Contractor outside the defined construction limits for mobilization, offices, equipment, or material storage.

11. DECONTAMINATE CONSTRUCTION EQUIPMENT

Power wash all construction equipment entering the project site to prevent the spread of noxious weeds and aquatic invasive species. This applies to all FWP projects, whether or not individual construction permits specifically address cleaning of equipment.

12. TREE PROTECTION AND PRESERVATION

The Contractor and the Owner shall individually inspect all trees within the project construction limits prior to construction. The Owner shall determine which trees are to be removed and which trees are to be preserved. Construction of the grading, utilities and various roadway facilities must not significantly damage the trees root system or hinder it's chances for survival. Reasonable variations from the Contract Documents, as directed by the Project Representative, may be employed to ensure the survival of trees.

13. CONSTRUCTION SURVEYS

The Contractor will be responsible for all layout and construction staking utilizing the Project Representative's existing control and coordinate data for the project. Dimensions and elevations indicated in layout of work shall be verified by the Contractor. Discrepancies between Drawings, Specifications, and existing conditions shall be referred to the Project Representative for adjustment before work is performed. The Project Representative may set location and grade stakes prior to construction; however, it is ultimately the responsibility of the Contractor to check and verify all construction staking for the project.

Existing survey control (horizontal and vertical) has been set for use in the design and ultimately the construction of these improvements. A listing of the coordinates and vertical elevation for each of these control points may be included in the project drawings.

The Contractor will be responsible for preserving and protecting the survey control until proper referencing by the Contractor has been completed. Any survey control obliterated, removed, or otherwise lost during construction will be replaced at the Contractor's expense.

Contractor shall be aware of property pins and survey monuments. Damage to these pins will require replacement of such by a registered land surveyor at no cost to the owner.

The Contractor shall provide construction staking from the Contractor's layouts and the control points. Contractor's construction staking includes at a minimum:

1. Slope stakes located at critical points as determined by the Project Representative.
2. Blue tops every longitudinally and transversely for subgrade and crushed base to verify finish grading of course.
3. Location and grade stakes for drainage features and retaining walls.
4. Location stakes for roadside safety items, permanent and temporary traffic control, and misc. items as determined by the Project Representative.

Original field notes, computations and other records take by the Contractor for the purpose of quantity and progress surveys shall be furnished promptly to the Project Representative and shall be used to the extent necessary in determining the proper amount of payment due to the Contractor.

14. MATERIAL SOURCES AND CONSTRUCTION WATER

The Contractor shall be responsible for locating all necessary material sources, including

aggregates, earthen borrow and water necessary to complete the work. The Contractor shall be responsible for meeting all transportation and environmental regulations as well as paying any royalties. The Contractor shall provide the Project Representative with written approvals of landowners from whom materials are to be obtained, prior to approval.

The Contractor may use materials from any source, providing the materials have been tested through representative samples and will meet the Specifications.

Water for compaction efforts shall be supplied by the Contractor.

15. MATERIALS SALVAGE AND DISPOSAL

Notify the Owner for any material salvaged from the project site not identified in the Contract Documents. The Owner reserves the right to maintain salvaged material at the project site, compensate the Contractor for relocation of salvaged material, or agreed compensation to Owner for material salvaged by the Contractor.

Haul and waste all waste material to a legal site and obey all state, county, and local disposal restrictions and regulations.

16. STORED MATERIALS

Contractor shall use an approved storage area for materials. Materials and/or equipment purchased by the Contractor may be compensated on a monthly basis. For compensation, provide the Project Representative invoices for said materials, shop drawings and/or submittals for approval, and applicable insurance coverage, see General Conditions, Article 9.

17. STAGING AND STOCKPILING AREA

Contractor shall use staging and stockpiling sites for to facilitate the project as approved by the Owner. Contract Documents may show approved staging and stockpiling locations. Notify Owner within 24 hours for approval of staging and stockpiling sites not shown on the Contract Drawings.

18. SECURITY

The Contractor shall provide all security measures necessary to assure the protection of equipment, materials in storage, completed work, and the project in general.

19. CLEANUP

Cleanup for each item of work shall be fully completed and accepted before the item is considered final. If the Contractor fails to perform cleanup within a timely manner the

Owner reserves the right to withhold final payment.

Review these Contract Documents for additional Final Cleanup specifications for specific measures, associated with Contractor responsibilities and final payment.

20. ACCESS DURING CONSTRUCTION

Provide access to all public and private roadways and approaches within the project throughout the construction period.

21. CONSTRUCTION TRAFFIC CONTROL

The Contractor is responsible for providing safe construction and work zones within the project limits by implementing the rules, regulations, and practices of the Manual on Uniform Traffic Control Devices, current edition.

22. SANITARY FACILITIES

Provide on-site toilet facilities for employees of Contractor and Sub-Contractors and maintain in a sanitary condition.

23. CONTRACT CLOSEOUT

The Contractor's Superintendent shall maintain at the project site, a "Record Set of Drawings" showing field changes, as-built elevations, unusual conditions encountered during construction, and such other data as required to provide the Owner with an accurate "as constructed" set of record drawings. The Contractor shall furnish the "Record Set" to the Project Representative following the Final Inspection of the Project.

The Contractor's final payment will not be processed until the "Record Set" of drawings are received and approved by the Project Representative.

24. MEASUREMENT AND PAYMENT

Review these Contract Documents for additional Measurement and Payment specifications for definitions. Quantities are listed on the Bid Proposal for Payment Items. Additional material quantities, volumes, and measurements may be shown on the Contract Document drawings and/or specifications.

Unit Price quantities and measurements shown on the Bid Proposal are for bidding and contract purpose only. Quantities and measurements supplied, completed for the project, and verified by the Project Representative shall determine payment. Each unit price will be deemed to include an amount considered by the Contractor to be adequate to cover Contractor's overhead and profit for each bid item.

The Owner or Contractor may make a Claim for an adjustment in Contract Unit Price if the quantity of any item of Unit Price Work performed by the Contractor differs

materially and/or significantly (increase or decrease by 50%) from the estimated quantity indicated on the Bid Proposal.

Lump sum bid item quantities will not be measured. Payment for these lump sum bid proposal items will be paid on a less than monthly basis, based on the percentage of project completed as determined by the engineer.

Montana Fish, Wildlife & Parks

SPECIFICATIONS FOR WORK TECHNICAL PROVISIONS

Incorporation of Montana Public Works Technical Specifications.

The Technical Specifications as found in Montana Public Works Standard Specifications (MPWSS), Sixth Edition, April 2010 and/or current Addendums or Revisions; are hereby incorporated by reference and made a part of this Contract:

Incorporation of Montana Fish, Wildlife & Parks Technical Specifications and Modifications to MPWSS Technical Specifications.

In addition to the MPWSS Technical Specifications are the following Montana Fish, Wildlife & Parks Technical Specifications (modifications to MPWSS Technical Specifications).

SECTION 01010 -	Summary of Work
SECTION 01400 -	Contractor Quality Control and Owner Quality Assurance
SECTION 01450 -	Mobilization/Demobilization
SECTION 01610 -	General Equipment Stipulations
SECTION 01750 -	Final Cleanup
SECTION 02810 -	Fencing
SECTION 02910 -	Seeding
SECTION 15120 -	Plumbing

SECTION 01010
SUMMARY OF WORK

All applicable portions of this specification section in the MPWSS shall apply with the following additions, deletions and/or modifications.

PART 1 GENERAL

1.3 WORK SEQUENCE

Add the following:

- E. Maintain public access to the boat dock during construction.

1.4 CONTRACTOR USE OF PREMISES

Add the following:

- F. Utilize all areas within the limits of construction for Contractor staging and stockpiling of materials.

END OF SECTION 01010

SECTION 01400

CONTRACTOR QUALITY CONTROL AND OWNER QUALITY ASSURANCE

All applicable portions of this specification section in the MPWSS shall apply with the following additions, deletions and/or modifications.

PART 3 EXECUTION

3.1 GENERAL

C. Replace with the following:

The Contractor is responsible for providing all quality assurance testing by an independent testing agency. The Contractor will pay for all quality assurance testing by an independent testing agency.

PART 4 MEASUREMENT AND PAYMENT

No measurement will be made for this item. Payment will be included in the lump sum bid item for the project.

END OF SECTION 01400

SECTION 01450

MOBILIZATION/DEMOBILIZATION

Added Section.

PART 1 GENERAL

1.1 DESCRIPTION

- A. This item shall consist of the preparatory work and operations necessary performed by the Contractor for the movement of personnel, equipment, supplies, and incidentals to and from the work site. The work includes those actions necessary for obtaining necessary permits required for mobilization; for the establishment of all offices and facilities necessary to work on the project; for premiums on contract bonds; for insurance for the contract; and for other work on the various items on the project site. Mobilization costs for subcontracted work shall be considered to be included.
- B. Contractor's cost for administration, bonding, insurance, and site documents shall be included in mobilization and shall not be paid as a separate item.
- C. All equipment moved to the project sites shall be in good mechanical condition and free of fuel, oil, lubrication, or other fuel leaks. The Contractor shall immediately remove any equipment potentially or actually discharging environmentally damaging fluids.
- D. All equipment moved to the project sites shall be thoroughly cleaned before it is brought to the sites to prevent the introduction of weed seeds. Equipment removed from the sites may not be returned to the sites again until it is thoroughly cleaned again.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

PART 4 MEASUREMENT AND PAYMENT

No measurement will be made for this item. Payment will be included in the lump sum bid item.

END OF SECTION 01450

GENERAL EQUIPMENT STIPULATIONS

SECTION 01610

1. SECTION INCLUDES

- A. All equipment furnished and installed under this Contract shall conform to the general stipulations set forth in this section except as otherwise specified in other sections.

2. GENERAL

- A. **Manufacturer's Experience:** Unless specifically named in the Specifications, a manufacturer shall have furnished equipment of the type, size, and service specified which has been in successful operation at two facilities for not less than the past five years.
- B. **Manufacture** shall provide references from their installation including a contact name and phone number upon request.
- C. **Workmanship and Materials:**
 - 1. **Supplier** shall guarantee all equipment against faulty or inadequate design, improper assembly or erection, defective workmanship or materials, and leakage, breakage, or other failure. Materials shall be suitable for service conditions.
 - 2. All equipment shall be designed, fabricated, and assembled in accordance with recognized and acceptable engineering and shop practice. Individual parts shall be manufactured to standard sizes and gauges so that repair parts, furnished at any time, can be installed in the field. Like parts of duplicate units shall be interchangeable. Equipment shall not have been in service at any time prior to delivery, except as required by tests.
 - 3. Except where otherwise specified, structural and miscellaneous fabricated steel used in equipment shall conform to AISC standards. All structural members shall be designed for shock or vibratory loads. Unless otherwise specified, all steel which will be submerged, all or in part, during normal operation of the equipment shall be at least 1/4-inch thick.
- D. **Elevation:** The elevation of the site is approximately 3100 feet above mean sea level. All equipment furnished shall be designed to meet stipulated conditions and to operate satisfactorily at this elevation.
- E. **Single Source:** Like items of equipment shall be the end product of one manufacturer in order to achieve standardization.
- F. **Manufacturer's Representative:**
 - 1. **Manufacturer** shall provide a Manufacturer's Representative where specified to assist in the installation, adjustment, startup, certification and operating training.

2. Manufacturer's Representative shall be an employee of manufacturer who is factory trained and knowledgeable in the technical aspects of the products and systems including both operation and maintenance.
3. When the services of the representative are specifically required for a listed time period, the days shall represent 8 hours straight time exclusive of Saturdays, Sundays and holidays. Travel time is considered incidental to the work and will not apply to the required listed time.
4. If listed time is not required or is modified, an appropriate adjustment in payment shall be made. If the provided Manufacturer's Representative is found deficient in training or experience by the Owner or Engineer, the manufacturer shall furnish another acceptable representative.
5. Any training shall be at the job site at times scheduled by the engineer. And will be considered concluded only when the engineer is satisfied in regard to complete and thorough coverage.

3. ACCESSORIES

- A. General: All equipment shall be provided with the following accessories as applicable.
- B. Special Tools: Equipment requiring periodic repair and adjustment shall be furnished complete with all special tools, instruments, and accessories required for proper maintenance. Equipment requiring special devices for lifting or handling shall be furnished complete with those devices.
- C. Spare Parts:
 1. Furnish all spare parts specified or purchased prior to requesting the issuance of a Certificate of Completion and/or operation of the equipment by the Owner.
 2. Spare parts and special tools shall be properly packaged to avoid damage, in their original cartons insofar as possible, and shall be stored in a location as determined by the Engineer. Any spare parts found to be damaged or otherwise inoperable at the time of delivery shall be replaced or, if approved by the Engineer, satisfactorily repaired.
 3. Spare parts and special tools shall be labeled with a minimum 3-inch by 6-inch manila spare parts tag with such information as the part description, the manufacturer's part number, the applicable equipment description and manufacturer, the quantity of parts delivered in each package, the applicable specification section, and the **CONTRACTOR'S** and Project's name. This tag shall be firmly affixed to, and prominently displayed on the outside of each package.

4. OPERATION AND MAINTENANCE (O&M) MANUALS

- A. In addition to any requirement of other specifications, the manufacturer shall furnish four (4) copies of a complete instruction manual for installation, operation, maintenance, and lubrication requirements for each component of mechanical and electrical equipment or system. Each instruction manual furnished shall be clearly labeled to designate the system or equipment for which it is intended with reference to the building and equipment number, and the specification section where the item is specified.
- B. The manuals shall be furnished prior to the 75 percent completion point of the work. Submission of the manuals shall precede payment for all work completed in excess of the 75 percent completion level on the particular equipment and systems for which the manuals are due. Any deficiencies found by the Engineer to exist in the manuals submitted shall be corrected within 30 calendar days following notification of the deficiencies.
- C. Each instruction manual shall include, but not be limited to the following:
 - 1. Diagrams and illustrations.
 - 2. Detailed description of the function of each principal component of the system.
 - 3. Performance and nameplate data.
 - 4. Installation instructions.
 - 5. Procedure for starting.
 - 6. Proper adjustment.
 - 7. Test procedures.
 - 8. Procedure for operating.
 - 9. Shutdown instructions.
 - 10. Emergency operating instruction and troubleshooting guide.
 - 11. Safety precautions.
 - 12. Maintenance and overhaul instruction which shall include detailed assembly drawings with part numbers, parts list, instructions for ordering spare parts, and complete preventive maintenance instructions required to ensure satisfactory performance and longevity of the equipment.
 - 13. Lubrication instructions, which shall list points to be greased or oiled, shall recommend type, grade, and temperature range of lubricants, and shall recommend frequency of lubrication.
 - 14. List of electrical relay settings and control and alarm contact settings.

15. Electrical interconnection wiring diagram for equipment, including all control and lighting systems.
 - D. Manuals shall be complete in all respects for all equipment, controls, accessories, and associated appurtenances.
 - E. Manuals shall be assembled in one or more binders, each with title page, typed table of contents, and heavy section dividers with numbered plastic index tabs. Each manual shall be divided into sections paralleling the Equipment Specifications. Binders shall be three-ring, hard-back type. All data shall be punched for binding and composition and printing shall be arranged so that punching does not obliterate any data. The project title, division designation, and manual title printed thereon shall be as furnished by the Engineer.
 - F. When more than one binder is required, they shall be labeled "Vol. I." "Vol. 2," and so on. The table of contents for the entire set, identified by volume number, shall appear in each binder. Submit manual organization and format to the Engineer for approval prior to manual preparation.
 - G. Each O&M Manual shall be transmitted to the Engineer prior to installation of the equipment and all equipment shall be serviced in accordance with the manufacturer's recommendations prior to operation. A service record shall be maintained on each item of equipment and shall be delivered to the Engineer prior to final acceptance of the project.
5. WARRANTY
- A. A manufacturer's warranty is required for each piece of equipment as defined in the Contract General Conditions or technical specifications. The One-Year Correction Period shall begin at Substantial Completion of the entire project.
6. TESTS
- A. Pre-test mechanical and electrical equipment and systems and make corrections required for proper operation of such systems before requesting final tests. Final tests will not be conducted unless pre-tested.
 - B. Conduct final tests required in various sections of specifications in presence of authorized representative of the Contracting Officer. **CONTRACTOR** shall furnish all labor, materials, equipment, instruments, and forms, to conduct and record such tests.

END OF SECTION 01610

SECTION 01750

FINAL CLEANUP

Added Section.

PART 1 GENERAL

1.1 DESCRIPTION

- A. This work consists of final cleanup of the project site prior to final acceptance.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.1 CONTRACTOR RESPONSIBILITIES

The contractor shall be responsible for final cleanup at the end of the project to a level satisfactory to the owner. All construction debris, no matter how small, shall be collected and removed from the site. All wheel ruts shall be filled in and be leveled to match the adjacent grade and material. Re-seeding or re-sodding, or other re-surfacing may be necessary to repair any construction related impacts or damage.

All survey markings, stakes, temporary paint marks, flagging and other devices shall be removed regardless of who installed them. All excess pavement, concrete, gravel, soil, or other construction materials not intended for permanent use shall be removed.

All final slopes shall be dressed manually to remove woody debris, accumulated trash and oversized material. Any new slope or topsoil surfaces shall be hand raked to provide a uniform appearance. The contractor shall dress all gravel, pavement and concrete edges to eliminate abrupt edges and provide a smooth transition. All construction related temporary sediment control devices shall be removed as soon as practical.

PART 4 MEASUREMENT AND PAYMENT

No measurement will be made for this item. Payment will be included in the lump sum bid item.

END OF SECTION 01750

SECTION 02810

FENCING

Added Section.

PART 1 GENERAL

1.1 DESCRIPTION

- A. This work consists of Owner furnished and/or furnishing, erection, and placement of new fencing per the drawings and specifications.

PART 2 PRODUCTS

2.1 GENERAL

- A. Barbed wire shall be zinc-coated, steel barbed wire meeting the requirements of ASTM A-121. Breaking strength of strand wire shall be not less than 950 pounds. Barbs shall be uniformly spaced from 4 to 5 inches apart. Minimum weight of zinc coating shall be Class I. Wire shall consist of two twisted strands of 12 ½ gauge wire. "Red Brand" and "OK Brand Premium" are examples of wire that meet ASTM A-121. **Wire breaking strength and coating certification shall be provided to the Project Manager.** Install all wire on non-FWP owned parcel side of posts.
- B. Barbless wire shall be two smooth twisted strands of 12 ½ gauge wire: zinc coated steel meeting requirements of ASTM A-121 or equal. Breaking strength of a strand of wire shall be not less than 950 pounds, minimum weight of zinc coating shall be Class I. Install all wire on non-FWP owned parcel side of posts.
- C. Woven wire shall have metallic coating Type Z, Class 1 and be No. 12 ½ Grade 60, or, have metallic coating Type Z, Class 3 and be No 14 Grade 125. All woven wire shall meet or exceed the requirements of ASTM A116. Install all wire on non-FWP owned parcel side of posts.
- D. Brace panel wire shall be barbless, smooth 9 gauge **soft** wire meeting requirements of ASTM A-641. It will be used for constructing braces and panels, tying to anchors, etc.
- E. Staples. Wire staples of the barbed U-shaped type shall be used to fasten the wire fencing to the wooden posts. They shall be not less than 9 gauge galvanized, 1-3/4 inches long.

- F. Nails. Shall be 40 d common galvanized.
- G. Fence clips shall be not lighter than 12 ½ gauge, galvanized. They shall be used to fasten the wire to metal posts.
- H. Where designated, stays shall be 30” long twisted wire fence specifically manufactured for use as fence stays and made from #9 gauge galvanized smooth wire.
- I. Metal Posts. Metal posts shall meet the requirements of ASTM A-702 and be American manufactured. Painting shall be in accordance with good manufacturing practice. Same paint pattern shall be used throughout project site requiring installation of new metal posts. **Posts shall be 5½ feet long.** The metal shall be good commercial quality steel with maximum carbon content of 0.82%. Posts shall be tee section and shall have corrugations, knobs, notches, holes, or studs so placed and constructed as to engage a substantial number of fence line wires in proper position.

Each line post shall have a steel anchor plate weighing not less than 0.67 pounds, tapered to facilitate driving and securely fastened in such a position that its top edge will be two to three inches below ground when the post is driven to the prescribed depth. **Post shall weigh 1.33 lbs. per L.F. of post.**

- J. Wood Posts and Brace Rail. Posts and brace rail shall be made from western larch, lodgepole pine, ponderosa pine, or douglas-fir. They shall have the bark removed, be well seasoned, sound, and straight-grained. They shall be finished round. **Panel posts** shall be **5** inch minimum diameter and **7** feet in length. **Line posts** shall be **5** inch minimum diameter and **7** feet in length, or as specified in the project drawings. All posts shall be treated with a solution conforming to AWPAs standards. Penetration shall be at least ½ inch. Post shall be fully treated. Posts that are to be driven shall be tapered and treated. **Brace rail** shall be a minimum **4** inch diameter by **8** feet long, or as specified in the project drawings. All brace rail shall be fully treated conforming to AWPAs standards. **Certification of AWPAs treatment shall be provided to the Project Manager.**
- K. Wood Split Rails. Wooden split rails shall be made from western larch, lodgepole pine, ponderosa pine, or douglas-fir. They shall have the bark removed, be well seasoned, sound, and straight-grained. They shall be finished half round. **Wood rails** shall be **4½** inch minimum diameter and **8** feet in length. All rails shall be treated with a solution conforming to AWPAs standards. Penetration shall be at least ½ inch. All wood rail shall be fully treated conforming to AWPAs standards. **Certification of AWPAs treatment shall be provided to the Project Manager.** Fasten rails to posts with 8” TimberLok® screws, or approved equal.

- L. Brace Panels. Brace panels shall be placed at corners, endpoints and when run exceeds **30 rods or 500 feet**. Where the run requires a single brace, it shall be placed

to split the difference when appropriate. Brace panels shall be constructed as depicted in drawings and shall provide for strong anchorage points and shall be aligned with fence line within a tolerance of 2 degrees.

- M. Gates and Steel Panels. Wire gates shall be 12' (minimum) in width, or as designated on the project drawings. Gates shall be located in the field by the Engineer.

Where designated, wire gates and associated panels shall have the same number of strands of barbed wire as the fence line they are in, with a vertical spacing the same as the fence line they are in. Wire gates 14' wide and less shall have 2 wood stays, and gates over 14' wide shall have 3 wood stays, equally spaced across the gate. Stays shall be minimum 2½" diameter treated wood, and shall be tall enough to support all the fence wires at the correct height. Each wire gate shall have a new single panel on each side and a mechanical over-center gate closer. Wire gates in jackleg fences shall have four strands of barbed wire. Posts and brace rails shall be the same as specified for line fence panels and corners.

Where designated, install pre-fabricated steel panel gates (various lengths) as shown on the project drawings. **Panel gates shall be powder coated brown or green in color, with 6-Bar, 2" diameter tubing, 16 gauge high tensile steel.** Provide 6"x8' treated posts for each single panel brace on each side of panel gate. Provide galvanized chain long enough to wrap around gate and adjacent brace panel for locking closure.

- N. Stream Crossings. Stream crossings shall be minimum 20' wide and located 4' minimum on each side of the top of stream bank. Post and brace rail shall be the same as specified for line fence panels and corners. Stream crossings shall have 5 strands of smooth wire with a minimum of 6 metal stays per rod, spaced equally along the length of the PVC pipe described below. Stays shall be 30" long twisted wire specifically manufactured for use as fence stays and made from #9 gauge galvanized smooth wire.

Extend stays down past bottom wire attached to posts, creating a hinge point to pass debris. Thread bottom ends of stays through 1½" diameter PVC pipe suspended parallel to bottom wire. Bottom wire to be 1 foot above water surface.

Each stream crossing shall have a new single panel and mechanical over-center closure on each side.

- O. Minor Drainage Channels are differentiated from depressions by having sandy gravel or cobble bottoms. Such channels may or may not have flowing water year round. Minor channels may be fenced over without a stream crossing gate at the discretion of the Project Manager. Such channels shall have NO POSTS placed in the channel, and posts on either side shall be equally spaced from the edge of the channel. PVC pipe

shall be hung under the fence at the channel in the same manner as described in Stream Crossings, to prevent livestock passage.

- P. Deadmen anchors shall be used at grade depressions. They shall consist of a plate or disc of 10 gauge or thicker mild steel of 12-inch diameter. A No. 5 rebar shall be welded in the center and a loop formed in the other end to accept the tie wire. Rebar length shall be 30 inches after the loop is formed.

Alternately, two steel fence posts may be driven in the ground at an angle such that the ends above the ground cross at the low point. Wire shall be securely attached to the two posts and used to anchor the fence. Duckbill anchors are also approved. Other anchor types may be accepted upon approval of the Engineer or Project Manager.

Anchor wires shall be tied such that all wire is above the soil surface. No anchor wire shall be buried. If any part of the deadman projects out from the fence line above ground, it shall be cut off no more than 4" from the anchor wire attachment. No sharp edges shall remain on cut ends.

PART 3 EXECUTION

3.1 CLEARING AND GRUBBING

- A. "Clearing" shall consist of the falling of trees greater than 3 inches diameter at chest height, delimbing them, and cutting into six-foot sections. Clearing shall also include the disposal of stumps, brush, windfalls, limbs, sticks, piles of sawdust, rubbish, debris, vegetation, and other objectionable material occurring within the clearing limits or which interfere with excavation or embankment.
- B. "Grubbing" shall consist of the removal from the ground and the disposal of roots, stumps, together with duff, matter, roots, and debris from the grubbing limits.
- C. Construction methods for clearing and grubbing operations are as follows:
 - 1. No stumps or roots shall remain more than 4 inches above the ground along the fence line.
 - 2. Low hanging branches and unsound or unsightly branches on trees or shrubs designated to remain shall be removed as directed. Branches of trees extending over the fence line shall be trimmed to give a clear height of 8 feet above the ground along the fence line. Width of clearing for fence line shall be 4 feet.

3.2 FENCE INSTALLATION

- A. Post holes and excavations for footings and anchors shall be excavated on the lines established by the Engineer to the depths and cross-sections shown on the standard drawings. **All fence post hole excavations shall be on FWP property or easement, 12" from the surveyed property boundary line, marker, or monument.** Do not disturb any survey property corner monument or marker during fence installation. Leave all line-of-sight survey marker t-posts in place.
- B. Wooden posts may be driven when so prepared and any damaged posts shall be repaired or rejected at the discretion of the Project Manager. In all cases where posts are repaired, the damaged area or split shall be given **two coats of preservative material** approved by the Project Manager. Posts shall be plumb when set. All posthole filling and backfilling work shall be in six-inch layers and each layer shall be solidly tamped and compacted as it is placed.
- C. Posts that are cut or trimmed for any valid reason shall be given **two coats of preservative material** approved by the Engineer. Braces shall be securely nailed to terminal and brace posts. **Brace to post joint shall be coped or notched.** No square to round joint accepted.
- D. Deadmen or anchors will be used at grade depressions or other places where the vertical space from the ground to the bottom fence wire has exceeded the design value within a one rod distance.

In such situations where the bottom of the depression is an intermittent stream channel with a sandy gravel or cobble bottom or an active ditch, the depressions shall be treated as a Minor Drainage Channel. Such channels shall have **NO POSTS PLACED IN THE CHANNEL**, and posts on either side shall be equally spaced from the edge of the channel. PVC pipe shall be hung under the fence at the channel in the same manner as described in Stream Crossings, to prevent livestock passage.

- E. Brace panels shall be installed at angle points, corners, gates, or wherever a break in the terrain occurs. However, in no case shall brace panels be more than **30 rods or 500 feet apart**. See Table 1 for brace panel installation requirements. Brace wire shall be tight when twisted. Double wrap the wire at brace post tie-off. Cross the braces with the end of the wires to be tied off. **Barbed wire fence wire shall be tied off at each brace.**
- F. Wood line posts shall be installed **every tenth post (165 feet)** or evenly spaced on **runs longer than 15 rods (247 feet)**. In no case shall a line post be used as a substitute in a situation that would typically require a single, or double, brace.

Table 1. Brace Panel Installation Requirements

Panel Type	No. of Panels	Location Applications	
		Horizontal	Vertical
Single	1	In Line, Each side of gates	Constant Grade
Double	2	Angle points < 90°	Grade Breaks < 45°
Corner	4	90° Corners	Grade Breaks > 45°

- G. All posts shall be plumb and solidly set in place after backfilling or driving has been completed.
- H. Stretching by a motor vehicle will not be permitted; the power must be by or through a mechanical stretcher or device designed for such use.
- I. Fence line shall be straight and square between corner points.
- J. Fence clips shall be hooked and **both ends twisted all the way around fence wire.**
- K. Tension shall be applied in accordance with wire manufacturer's recommendations.
- L. Fence wire shall be wrapped around terminal posts and fastened to itself with at least four turns. Fence wire, in general, shall be placed on the side of the post opposite the site but on curves shall be placed so the force is against the post. At grade depressions and alignment angles, where stresses tending to pull posts from the ground are created, the wire fence shall be snubbed or guyed at the critical points by brace wire attached to each horizontal line of fence wire and the end of the combined strands being firmly attached to a "deadman" buried not less than two feet in the ground, or to an approved "anchor" at a point which will serve best to resist the pull of the wire fence. "Deadmen" also may be fastened to posts. Fence wire and brace wire shall be installed without nicks or significant abrasions. Nicks or abrasions that may lead to pre-mature wire breaks shall be rejected by the Project Manager and replaced at no cost by the Contractor.
- M. U-shaped staples shall be driven diagonally across the wood grain so that both points do not enter between the same grain. In depressions where wire up-lift occurs, staples shall be sloped slightly upward, against the pull of the wire. On level ground and over knolls, staples shall be sloped slightly downward. Wire shall be stapled tightly at corner, end, and pull posts. **In no case shall staples be driven so tight to limit future wire tensioning, or as to damage the wire.**

- N. A cross-fence, not the property of the Owner, shall **not** be fastened to the Owner's fence but shall be terminated, in a workmanlike manner, adjacent thereto.
- O. Upon completion, the fence shall be true to line and grade; **all posts shall be vertical and firm** and all wire shall be taut and the completed fence shall be completely acceptable in all respects. No openings shall be left that will permit stock to pass through the fence.
- P. Exterior boundary fences shall have owner-supplied 4" x 12" boundary signs attached no more than 500 feet apart and 2 at every corner panel. Signs shall be securely fastened to posts, rails or between fence wires as determined by the Project Manager.

Additional owner-supplied 12" x 18" aluminum signs shall be installed at all exterior gates and corners where designated by the Project Manager. The cost of installing such signs shall be subsidiary to the project and shall not constitute a pay item and shall be considered incidental thereto and no payment shall be made for it.

- Q. Weed Control: All equipment used during construction shall be thoroughly washed both inside, outside and underneath of all pickup boxes, trailers, trucks, etc. before entrance to the project area. Vehicles used to commute to and from job site shall be kept clean so as not to transport weed seed to project area. This cost shall be subsidiary to the project and shall not constitute a pay item and shall be considered incidental thereto and no payment shall be made for it.

PART 4 MEASUREMENT AND PAYMENT

4.1 BASIS OF MEASUREMENT

- A. All types of fence will be measured by the linear foot (or rod) complete in place, on its actual alignment, **inclusive** of brace panels, and corners, and **exclusive** of gates and associated gate panels. The measurement will be made on the fence line along the ground, from end post to end post, less the length of gates and gate panels, the intent being to measure the actual length of fence in place.

If it is necessary, in crossing depressions, to install a double section of fence, vertically, this extra section will be measured for payment.

- B. Gates will be measured on a per each basis, **including 2 single panels**. In the case of double wildlife gates, this shall include both gates and three single braces as a single unit.
- C. Stream Crossings shall be paid as wire gates.

- D. Deadmen anchors, minor drainage channels, tree anchors, and any line clearing required **shall be subsidiary to the fence and shall not constitute pay items and shall be considered incidental to fence construction.**
- E. For the purpose of change orders to the contract, individual unit prices shall be provided for single (two-post) braces, double (three post) braces, two panel corners, four panel corners, and wire gates.

4.2 BASIS OF PAYMENT

- A. All types of fence shall be paid for per foot (or rod) basis, measured as specified above.
- B. Gates will be paid for on a unit price per each basis.

END OF SECTION 02810

SECTION 02910

SEEDING

All applicable portions of this specification section in the MPWSS shall apply with the following additions, deletions and/or modifications.

PART 1 GENERAL

1.1 DESCRIPTION

Add following:

This work also includes conserving, placing, and finishing topsoil placement at designated areas on the project drawings or as directed by the Engineer.

PART 2 PRODUCTS

2.1 SEED

Add the following:

Utilize the following seed mix for all areas to be seeded.

Seed Name	% Pure Live Seed	Lbs. Per Acre
Western Wheatgrass	15	*
Bluebunch Wheatgrass	35	*
Mountain Brome	40	*
Rough Fescue	10	*

* Drilled Rate = 25 lbs/acre, Broadcast and Hydroseed Rate = 50 lbs/acre

2.2 TOPSOIL

Add the following:

Utilize all salvaged topsoil conserved from clearing and grubbing operations to cover excavation and embankment slopes prior to fertilizing, seeding, or mulching.

2.4 FERTILIZER

Delete this Section.

PART 4 MEASUREMENT AND PAYMENT

No measurement will be made for this item. Payment will be included in the lump sum bid item.

END OF SECTION 02910

SECTION 15120

PLUMBING

PART 1 GENERAL

1. WORK INCLUDED

- A. This section covers the work necessary to furnish and install piping, fixtures, appliances, equipment, and appurtenances for complete and functional plumbing systems as indicated in the Drawings and specified herein.
- B. Work included in this section is as follows:
 - 1. Disinfection System Piping
 - 2. Plumbing within new spring box

2. GENERAL

- A. Piping and appurtenances provided under these Specifications do not require painting.
- B. The Drawings do not show all details of all piping systems, and instead only portray the functionality required. The **CONTRACTOR** shall provide all accessories, adapters, appurtenances and supports to achieve a complete and functional installation. The **CONTRACTOR** shall verify all piping routings and locating dimensions shown for conflicts with other piping or utilities, and shall provide any offsets required to achieve clearance at no additional cost to the **OWNER**. In the event changes to the locations of equipment or piping shown are necessary, the **CONTRACTOR** shall submit such changes in writing to the **ENGINEER** before proceeding with such changes.
- C. All fixtures and appliances shall be installed in complete accordance with the manufacturer's recommendations and requirements, including structural support and venting.
- D. Manufacturers' references are included herein for reference and to establish the required level of quality; "or equal" products may be proposed subject to the requirements for Submittal review.

3. CODES, PERMITS AND COMPLIANCE

- A. Plumbing under these Specifications shall conform to all requirements of the current editions of the UPC, IBC, UFC, and all other codes, standards and

ordinances applicable to work. In event of conflicts between these Specifications and applicable codes or standards, the codes and standards shall govern.

- B. All piping, fixtures, and accessories shall be installed in strict accordance with the laws and regulations of the State of Montana and Lake County.
- C. Any permits legally required for the work under these Specifications shall be the responsibility of the **CONTRACTOR** to obtain. Costs of such permits and scheduling of any inspections required in conjunction with such permits or associated requirements shall be the responsibility of the **CONTRACTOR**.
- D. Completed piping systems shall be tested by the **CONTRACTOR** in accordance with all applicable codes and standards before charging such piping.

4. SUBMITTALS

- A. The **CONTRACTOR** shall provide the following information:
 - 1. Fixtures and Appliances - Provide manufacturers' catalog information, photographs, material and component specifications, fully dimensioned drawings, weight, support requirements, storage and installation instructions, and operating manual.
 - 2. Exposed Piping Systems - Provide manufacturers' catalog information, material specifications, dimensions, and ratings.
 - 3. Subsurface piping systems - Provide manufacturers' catalog information, material specifications, dimensions, and ratings.
 - 4. Pipe Fittings and Appurtenances - Provide manufacturers' catalog information, material specifications, dimensions and ratings.
 - 5. Pipe Supports - Provide manufacturers' catalog information, material specifications, dimensions, load ratings, recommended spacing, and types and arrangement of fasteners, including substrate requirements.

PART 2 PRODUCTS

1. GENERAL

- A. Like items of material provided under these Specifications shall be the product of one manufacturer.

2. PVC PIPE & FITTINGS

- A. Exposed water pressure piping 2-1/2-inch diameter and smaller shall be schedule 40 PVC pressure pipe conforming to ASTM D1784.
- B. Fittings shall be Schedule 40 PVC with solvent weld or threaded joints
- C. Buried "CT" pipe shall be PVC pressure pipe conforming to AWWA C900 requirements. Use DR 25 Class 165 Pipe.

3. PLUMBING PIPE SUPPORTS AND ACCESSORIES

- A. Wall-mounted pipe supports for lines 1½-inch and smaller shall be one-hole, clamp type, and shall be *Grinnell Figure 126*, or **ENGINEER** approved equal.
- B. Wall-mounted pipe supports for lines larger than 1½-inch shall be welded steel, heavy duty clamp type, and shall be *Grinnell Figure 199*, or **ENGINEER** approved equal.
- C. Hanger pipe supports shall be cradle type with hanger rods and clevises, and shall be *Grinnell Figure 104* or *Figure 260*, or **ENGINEER** approved equal.
- D. Fasteners for pipe clamps and hangers shall be as recommended by the support manufacturer, and shall be suitable for proper anchorage to the substrate material to which attached. Fasteners shall be galvanized steel.
- E. Sealants shall be used on all threaded pipe joints and shall be rated for the fluid carried by the conduit. Sealants may be approved pipe thread compound(s). *Teflon* tape thread sealant may not be used.
- F. Pipe and tubing wall penetrations through CMU walls shall be sleeved with Schedule 40 PVC pipe spools with a nominal diameter at least 2 inches larger than the carrier pipe, and a length equal to the wall thickness. After insertion of the carrier pipe, the annular space inside the sleeve shall be sealed at each wall surface with *Dow Chemical Great Stuff* expandable foam, or equal. Pipe and tubing penetrations through wood-framed, gypsum board walls do not require sleeves, but shall be sealed with sheetrock mud.

4. BALL VALVES – WATER SERVICE

- A. Interior valves for 2-inch and smaller hot and cold water service shall be all bronze, end entry type, with *Teflon* seats and packing and lever operators with fixed stops. Valves shall be rated 400-pound WOG, and shall have threaded ends. Valves shall be *Nibco T-585-70*, *Grinnell Figure 3500*, or **ENGINEER** approved equal.

PART 3 EXECUTION

1. GENERAL

- A. All plumbing and installation of piping, appurtenances, and fixtures shall fully conform to the current edition of the *Uniform Plumbing Code* (UPC), and all applicable state and local regulations. All work shall be approved by the State Plumbing Inspector.
- B. Drawings do not attempt to show the exact details of all piping. No extra payment will be allowed for fittings, adapters, appurtenances, clearances or offsets required to complete the Work. Changes in locations of equipment or piping, contemplated by the **CONTRACTOR**, must be submitted to the **ENGINEER** in writing, and cannot be executed without the **ENGINEER'S** approval. All work shall be completed to provide a fully functional installation as shown and specified.
- C. Unions shall be provided in piping systems where shown, and adjacent fixtures and appliances where necessary to assure proper alignment without stressing piping members of fixture connections. Insulating (dielectric) unions shall be provided on domestic hot and cold water piping at all connections between steel and copper (or brass) piping and for all connections to electrically powered appliances.
- D. Plumbing fixtures shall be plumbed, trapped, and vented as required by UPC, and as shown. In the event of conflicts between the plumbing requirements shown and UPC, requirements of the Code shall take precedence.

2. PIPING

- A. Piping runs shall be level and plumb, except where slopes are specifically called or shown.
- B. Pipes shall be adequately supported by clamps or hangers at intervals not to exceed 10 feet, and either side of all changes in direction. Where additional supports may be needed to provide pipe stability, they shall be provided at no additional cost.
- C. Solvent-weld PVC pipe jointing shall be allowed to fully cure in an unstressed and unloaded position.
- D. All piping intended to carry potable water shall be disinfected before placing into service. Disinfection procedures shall conform to AWWA C651.
- E. All piping systems installed under this section do not require painting or coating.

3. TESTING

- A. Completed cold water piping, including fixture connections shall be tested and demonstrated to be leak free by the **CONTRACTOR** by charging with water and maintaining 60 psi pressure for 2 hours in the presence of the **ENGINEER**. Any leaks or defects shown shall be promptly remedied by the **CONTRACTOR**.
- B. Other tests of completed piping as prescribed by the UPC shall also fully apply, and shall be conducted in the presence of the **ENGINEER**.

PART 4 MEASUREMENT AND PAYMENT

- 1. No measurement will be made for this item. Payment will be included in the lump sum bid item.

END OF SECTION 15/120